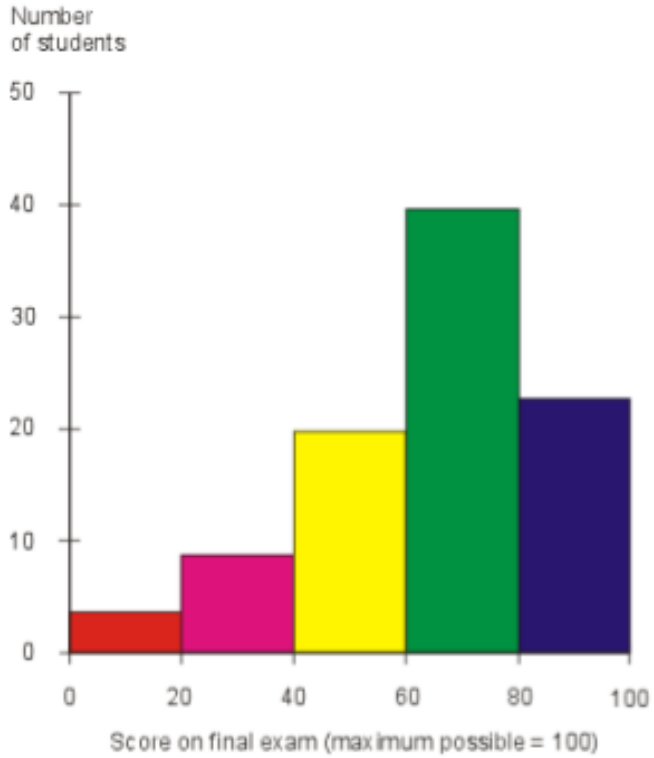
1.3 Histograms

Histograms = shows the frequency of values in a set of numerical data. They help us to see the distribution of data.

- Not a bar chart as they use bins and a bar chart can use non numerical data.

Vertical Axis = shows the frequency of the data within each bin.

Horizontal Axis = data values grouped into bins.



How to form one:

The following is the OHS girl's basketball team's points scored in 28 games from last season:

32	32	36	37	37	38	43	44	46	49	52	55	55	56
58	59	61	61	62	62	63	70	72	73	77	82	84	86

1) A bin size is chosen; however you should limit to only 6 or 7 bins.
   ** often is given to you **

A bin size of 10

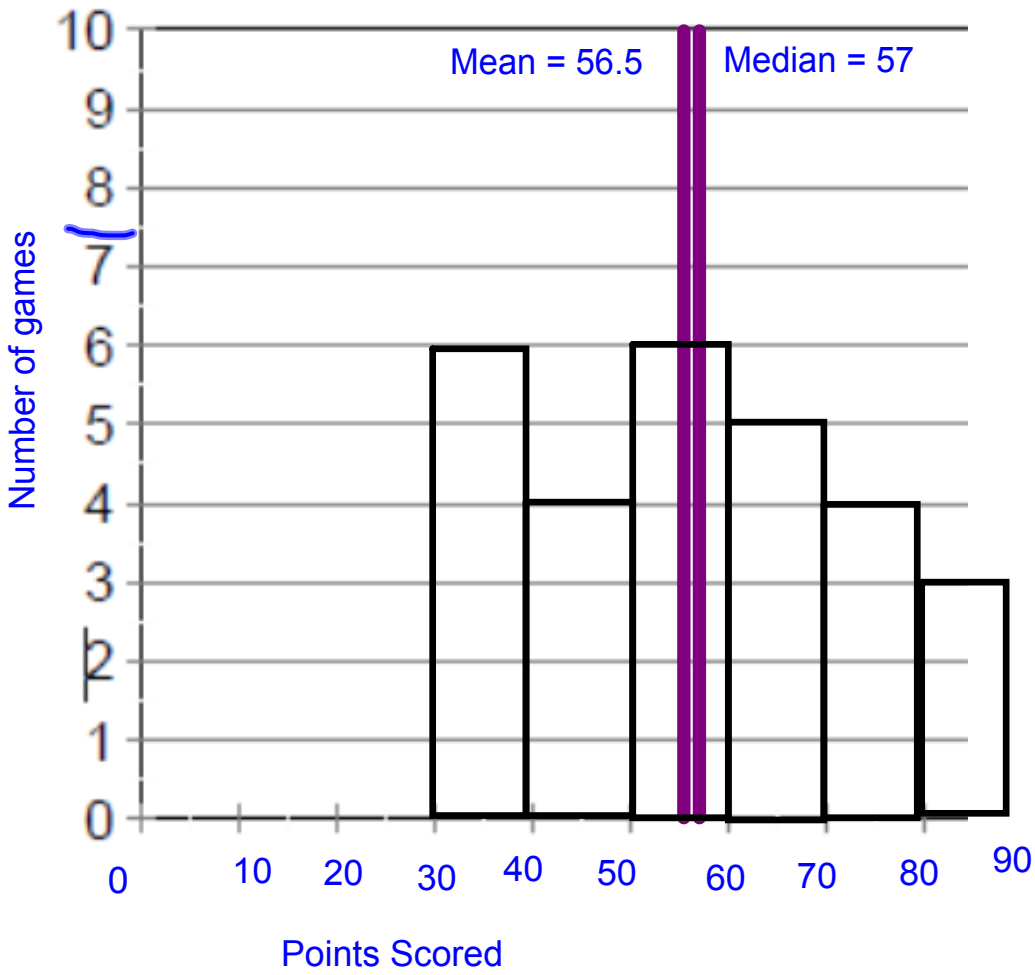
2) A frequency table is created:

** The bin 30 - 40 includes values that are 30 or greater but less than 40, etc.**

Bin	Tally	Frequency
30 - 40		
40 - 50		
50 - 60		
60 - 70		
70 - 80		
80 - 90		

3) Use the frequency table to draw a histogram to display the data.
Label your axis and histogram.

Bin	Tally	Frequency
30 - 40	𝍸 I	6
40 - 50	IIII	4
50 - 60	𝍸 I	6
60 - 70	𝍸	5
70 - 80	IIII	4
80 - 90	III	3



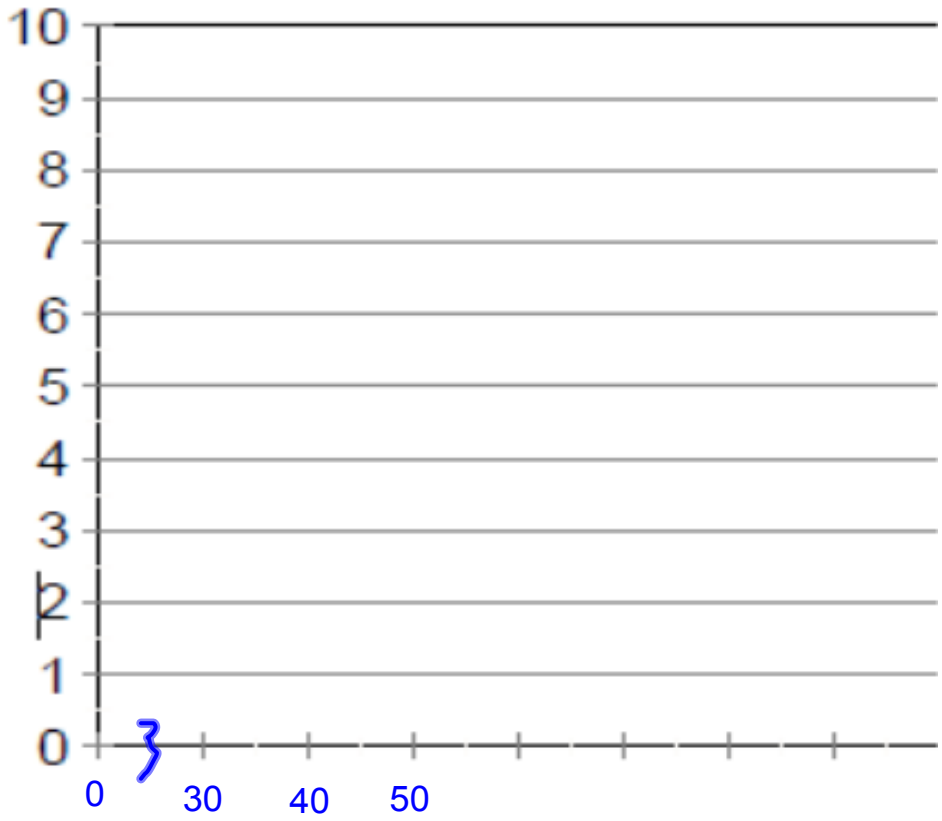
4) Mark a line for the median and mean.

Practice:

The marks for 18 students are listed below. Complete a frequency table using bin sizes of 10 and draw a histogram for the data. Label.

55	70	60
80	66	59
69	66	82
62	50	47
60	30	75
73	91	72

Bin	Tally	Frequency
30-40		
40-50		
50-60		
60-70		
70-80		
80-90		
90-100		



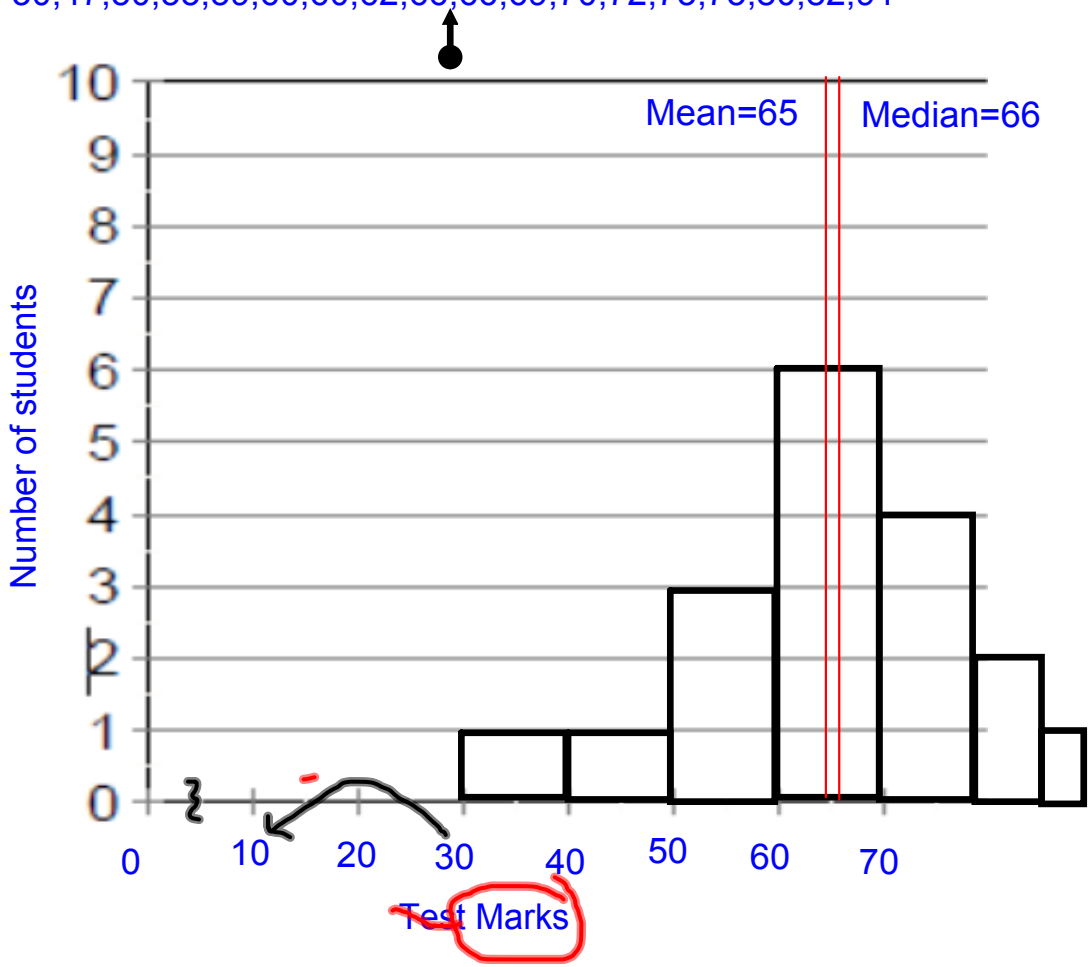
Practice:

The marks for 18 students are listed below. Complete a frequency table using bin sizes of 10 and draw a histogram for the data. Label.

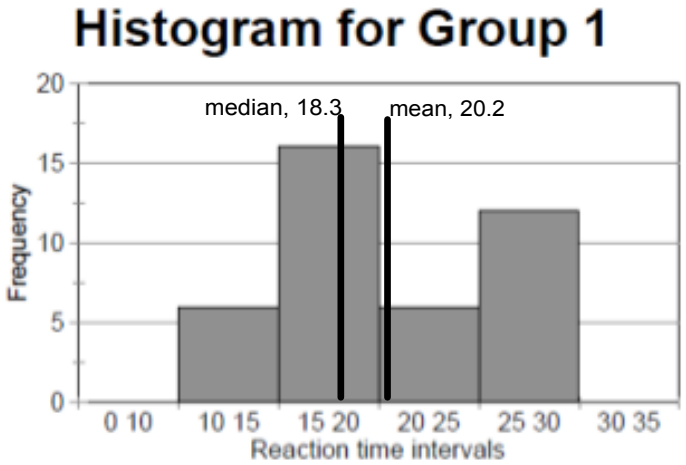
55	70	60
80	66	59
69	66	82
62	50	47
60	30	75
73	91	72

30,47,50,55,59,60,60,62,66,66,69,70,72,73,75,80,82,91

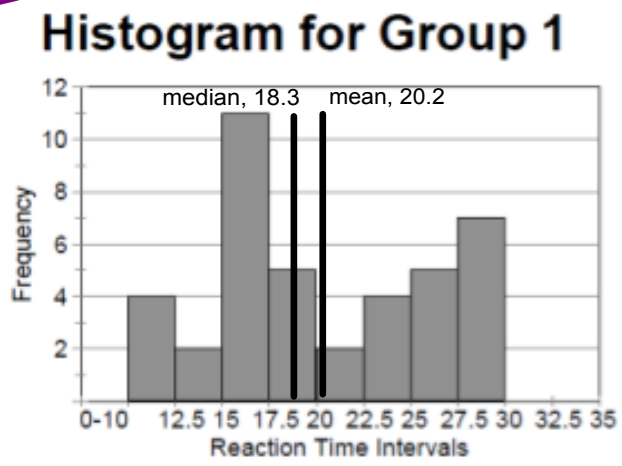
Bin	Tally	Frequency
30-40	I	1
40-50	I	1
50-60	III	3
60-70	++++ I	6
70-80	IIII	4
80-90	II	2
90-100	I	1



Focus Questions: P.23



** Bin size of 5 **



** Bin size of 2.5 **

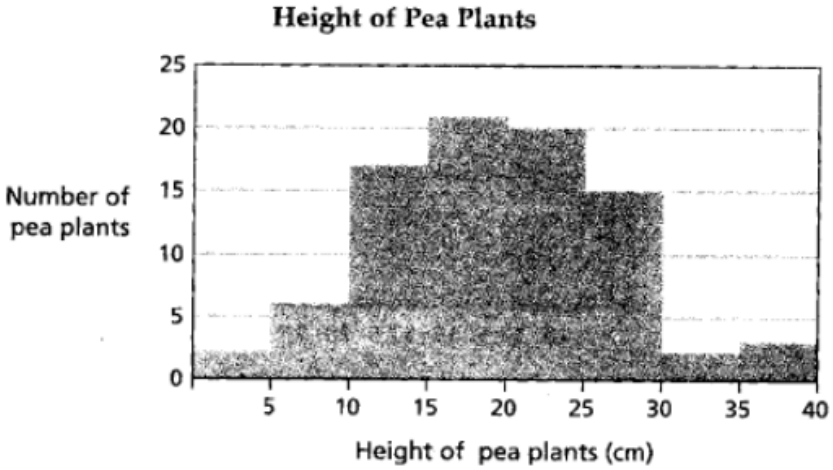
- Vertical lines show locations of the mean and median.

19. b) which bin size, 2.5 or 5, do you think gives a better picture of how the data are distributed? Explain.

The bin size of 2.5 gives us a better picture of how the data are distributed. The bin size of 5 shows us 2 clusters, while a bin size of 2.5 shows us 3 clusters (one very small one).

c) Predict what you think a histogram using a bin size of 10 will look like.

It would have only 2 bars, a 10 - 20 bar with a frequency of 22, and a 20-30 bar with a frequency of 18.



a) How many pea plants have heights from 5 - 10 cm?

_____

b) How many pea plants have heights from 20 - 25 cm?

_____

c) A 27 cm pea plant would be included in which bin?

_____

d) A 15 cm pea plant would be included in which bin?

_____

e) Which bin has the highest frequency? What is the frequency?

_____

Warm-up

- Complete the following:

  Page 25: #26 (bin size 10)

  -Frequency table

  -Histogram

  -Each axis labelled

  -Mean and Median

  -Answer questions (not d)

Homework

Listed below are the numbers of Christmas trees sold at various locations on the same day.

17	27	19	20	21	31	23	23	24	25	27	44	27	25
27	17	28	29	22	32	35	33	34	32	36	36	41	26

Create a frequency table and a histogram for the data collected. Use a bin size of 10 and label your histogram.